DISCOVER-AQ

HSRL Data Summary

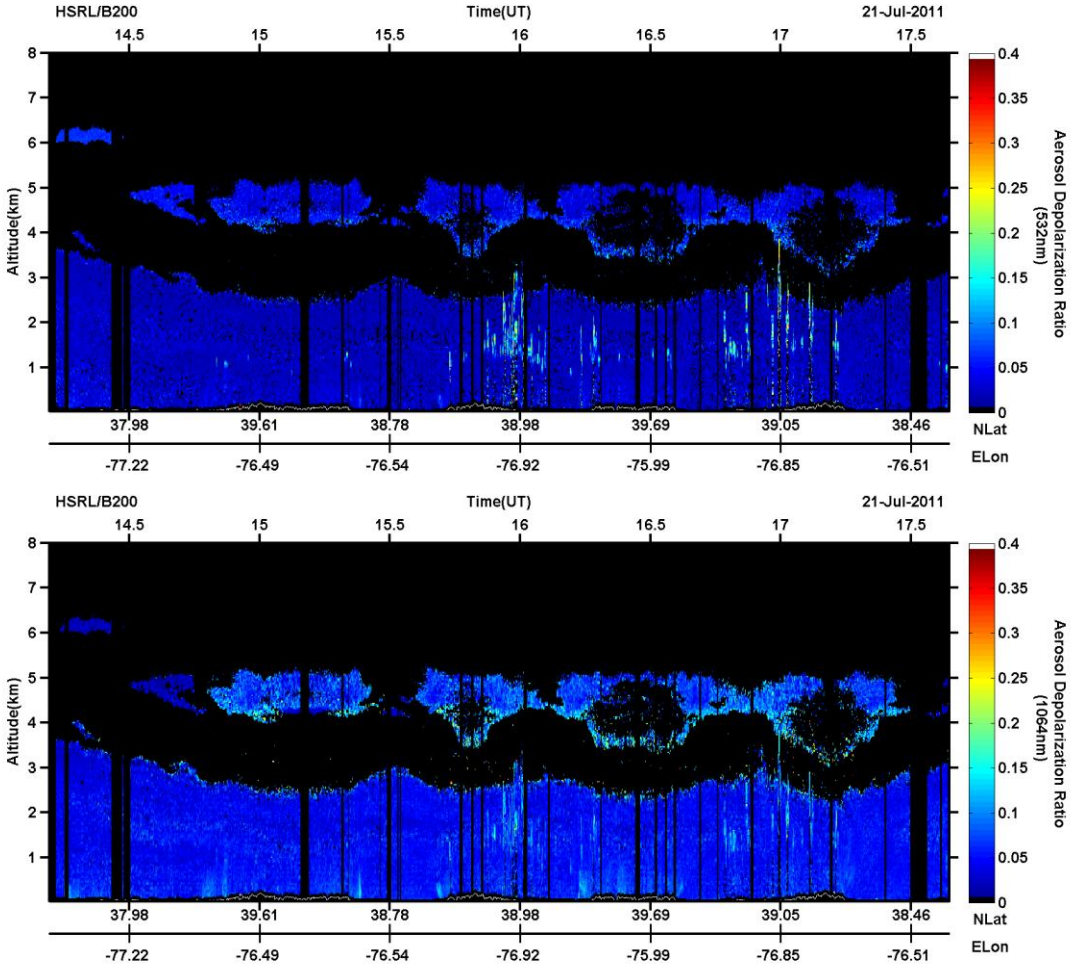
FLIGHT: Morning science flight (1 of 2)

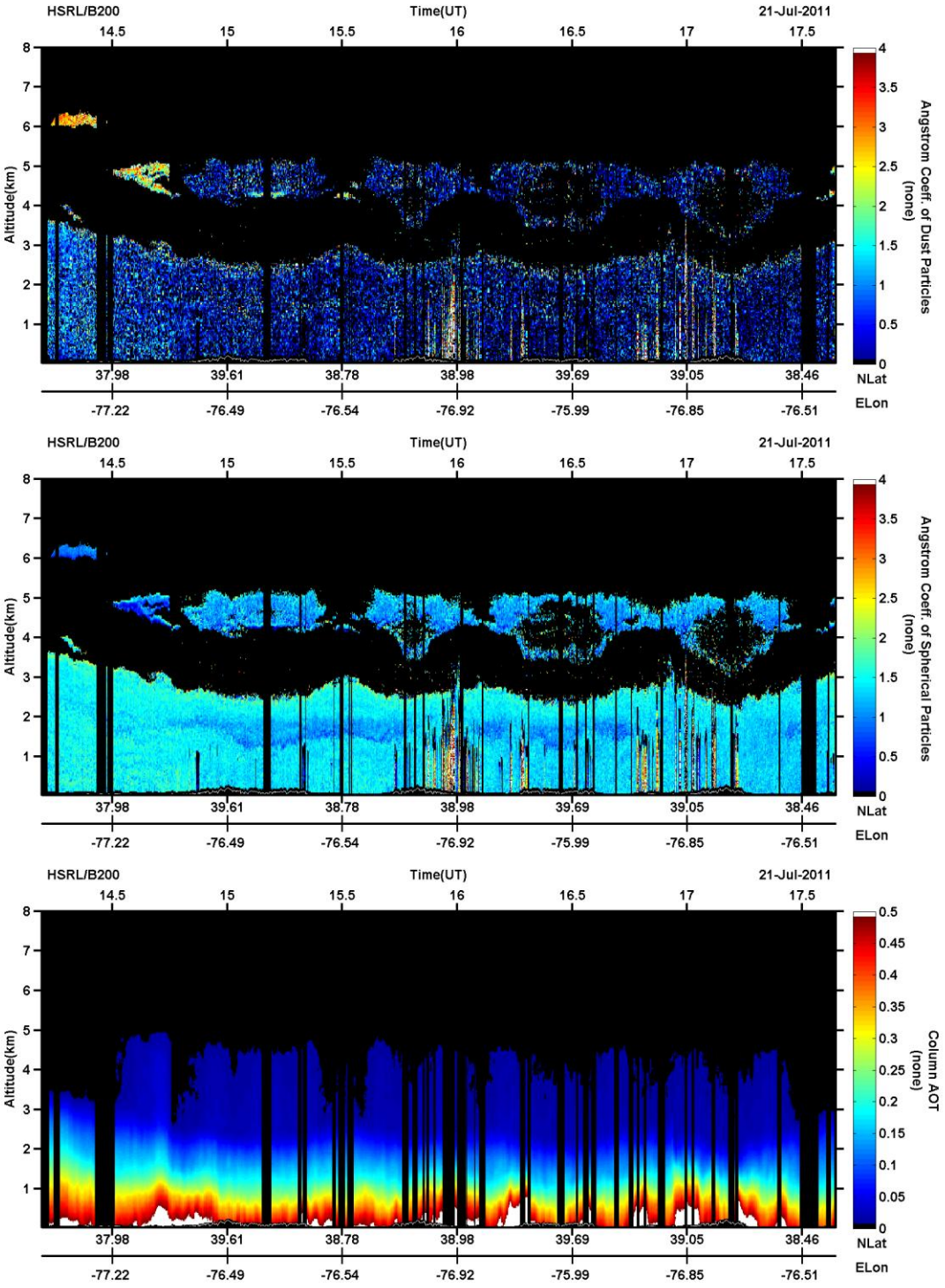
DATE: July 21, 2011

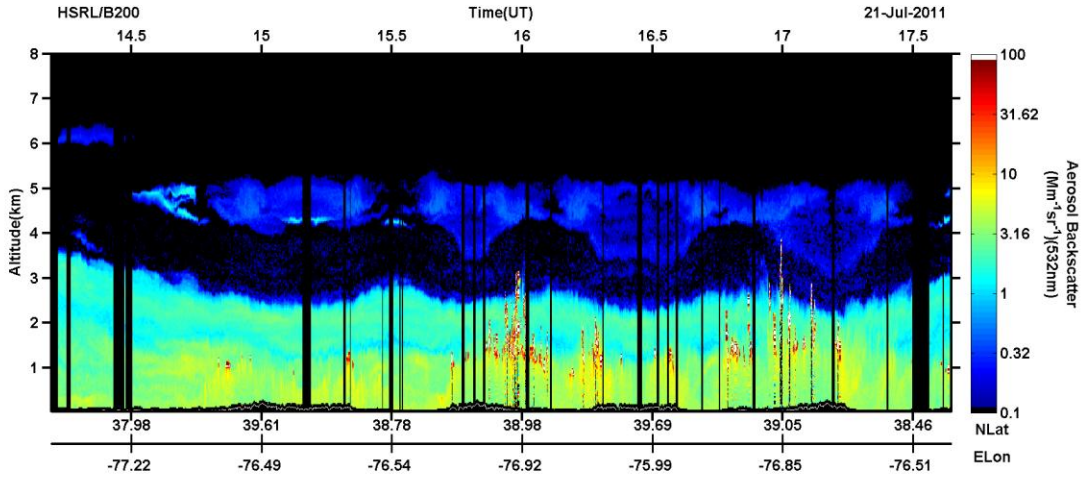
DURATION: 3.9 hours

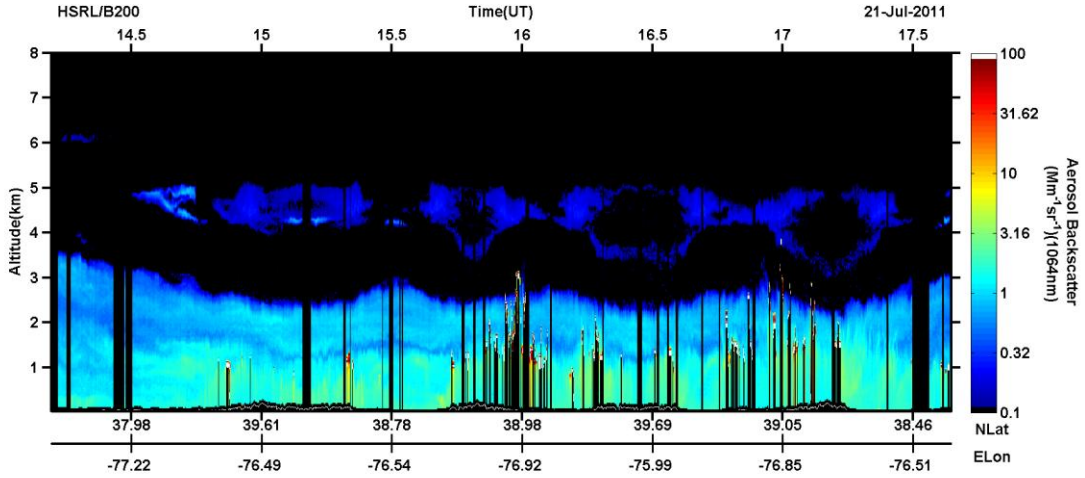
SUMMARY: Takeoff was at 10:00 AM local time from Newport News, VA. HSRL operation was nominal. Hot, humid, and hazy conditions were present. The boundary layer depth ranged up to about 3 km and a lofted aerosol layer was present at about 5 km. The normal flight pattern was flown.

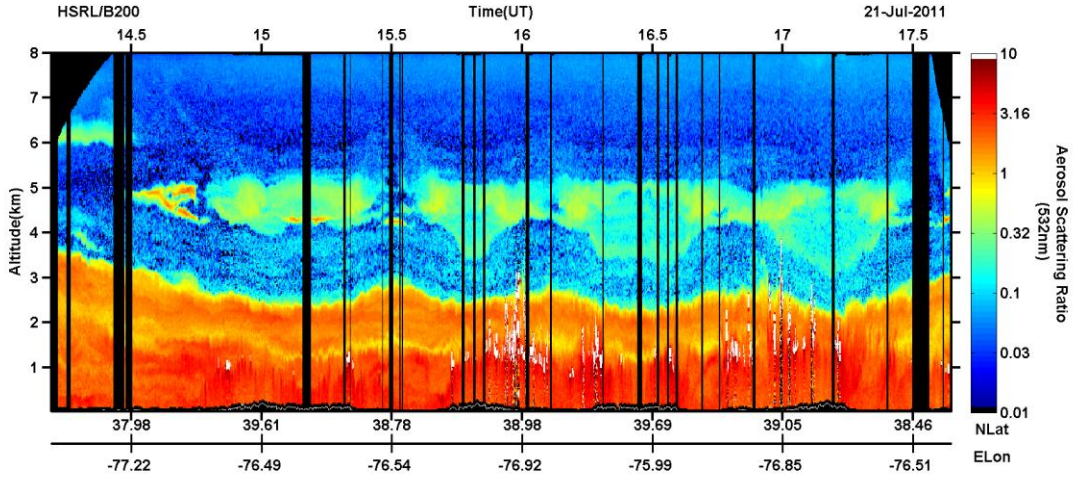
SUMMARY PLOTS:

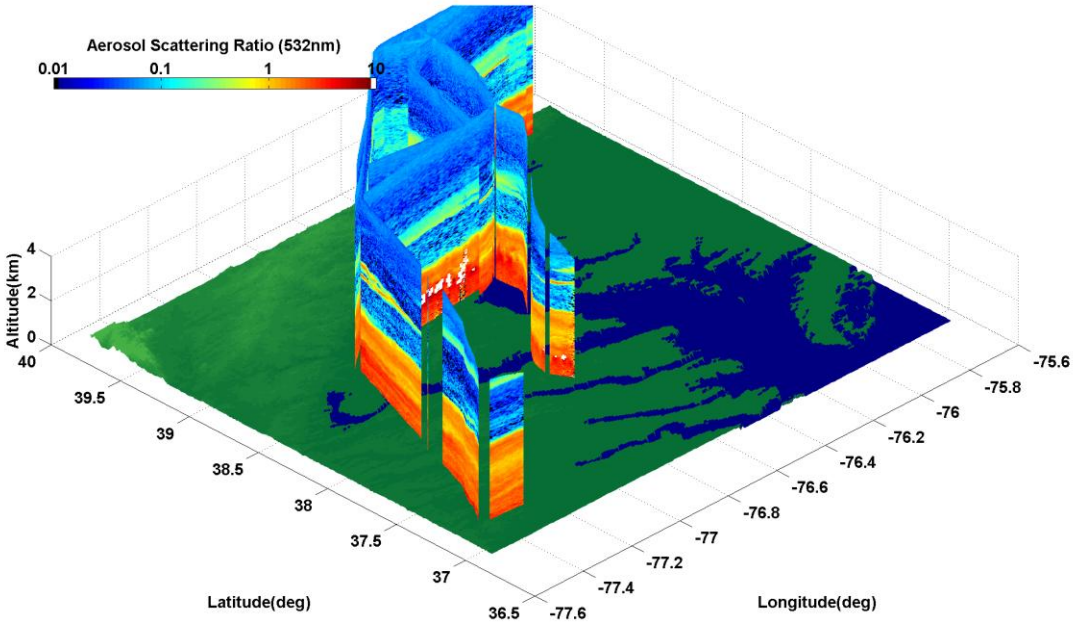


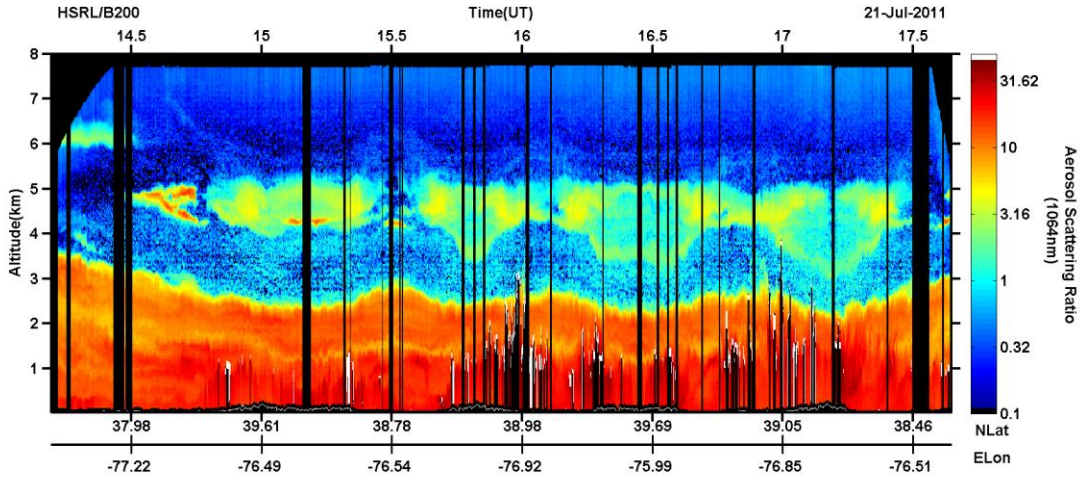

HSRL/B200
Time(UT)
21-Jul-2011
14.5
15
15.5
16
16.5
17
17.5
Altitude(km)
Angstrom Coeff. of Dust Particles (none)
NLat
ELon
37.98
39.61
38.78
38.98
39.69
39.05
38.46
-77.22
-76.49
-76.54
-76.92
-75.99
-76.85
-76.51
HSRL/B200
Time(UT)
21-Jul-2011
Angstrom Coeff. of Spherical Particles (none)
HSRL/B200
Time(UT)
21-Jul-2011
Column AOT (none)

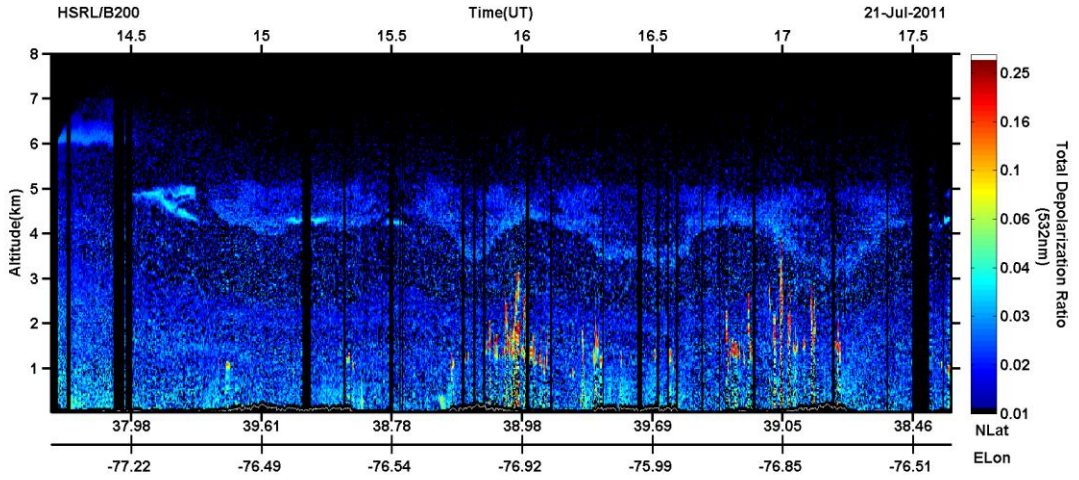

HSRL/B200
Time(UT)
21-Jul-2011
14.5
15
15.5
16
16.5
17
17.5
Altitude(km)
8
7
6
5
4
3
2
1
100
31.62
10
3.16
1
0.32
0.1
Aerosol Backscatter
(Mm-1sr-1)(532nm)
37.98
39.61
38.78
38.98
39.69
39.05
38.46
NLat
-77.22
-76.49
-76.54
-76.92
-75.99
-76.85
-76.51
ELon

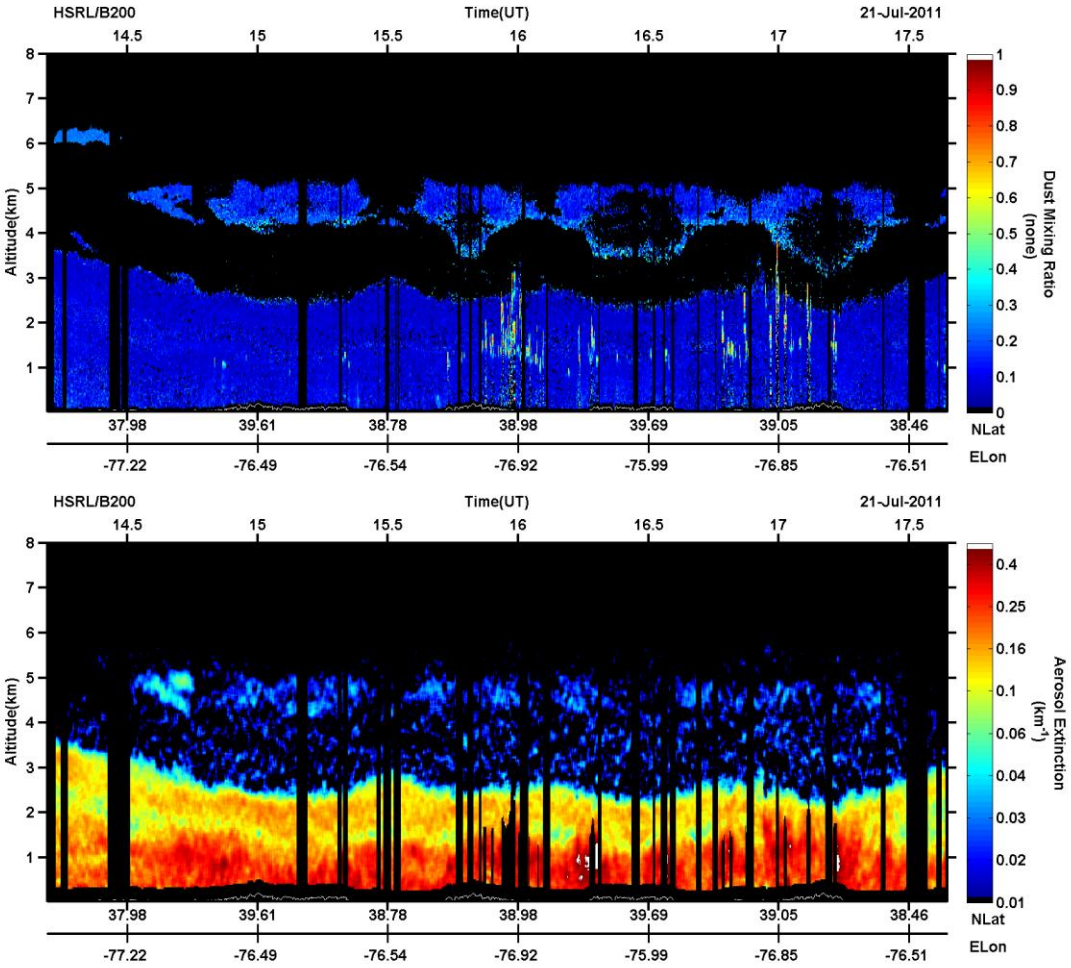

HSRL/B200
Time(UT)
21-Jul-2011
14.5
15
15.5
16
16.5
17
17.5
Altitude(km)
8
7
6
5
4
3
2
1
100
31.62
10
3.16
1
0.32
0.1
Aerosol Backscatter
(Mm-1sr-1)(1064nm)
37.98
39.61
38.78
38.98
39.69
39.05
38.46
NLat
-77.22
-76.49
-76.54
-76.92
-75.99
-76.85
-76.51
ELon

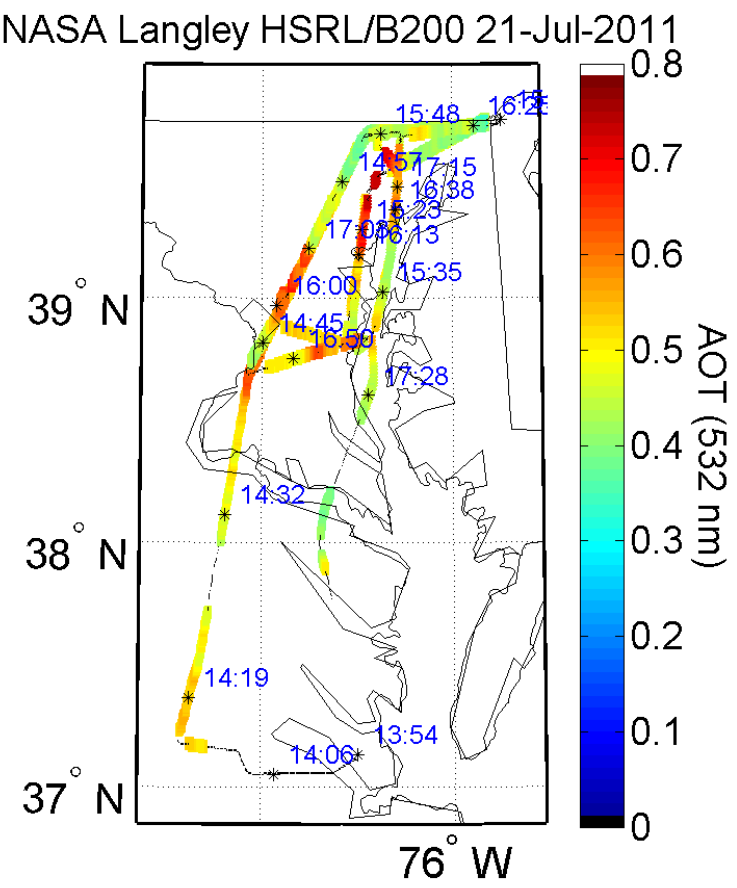

HSRL/B200
Time(UT)
21-Jul-2011
14.5
15
15.5
16
16.5
17
17.5
Altitude(km)
8
7
6
5
4
3
2
1
10
3.16
1
0.32
0.1
0.03
0.01
Aerosol Scattering Ratio
(532nm)
37.98
39.61
38.78
38.98
39.69
39.05
38.46
NLat
-77.22
-76.49
-76.54
-76.92
-75.99
-76.85
-76.51
ELon

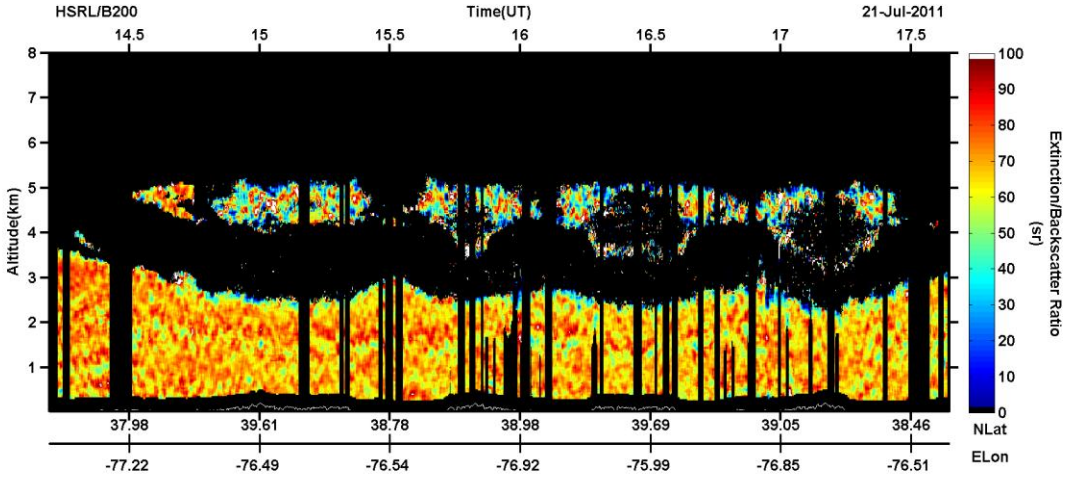

Aerosol Scattering Ratio (532nm)
0.01
0.1
1
10
Altitude(km)
4
2
0
40
39.5
39
38.5
38
37.5
37
36.5
Latitude(deg)
-77.6
-77.4
-77.2
-77
-76.8
-76.6
-76.4
-76.2
-76
-75.8
-75.6
Longitude(deg)

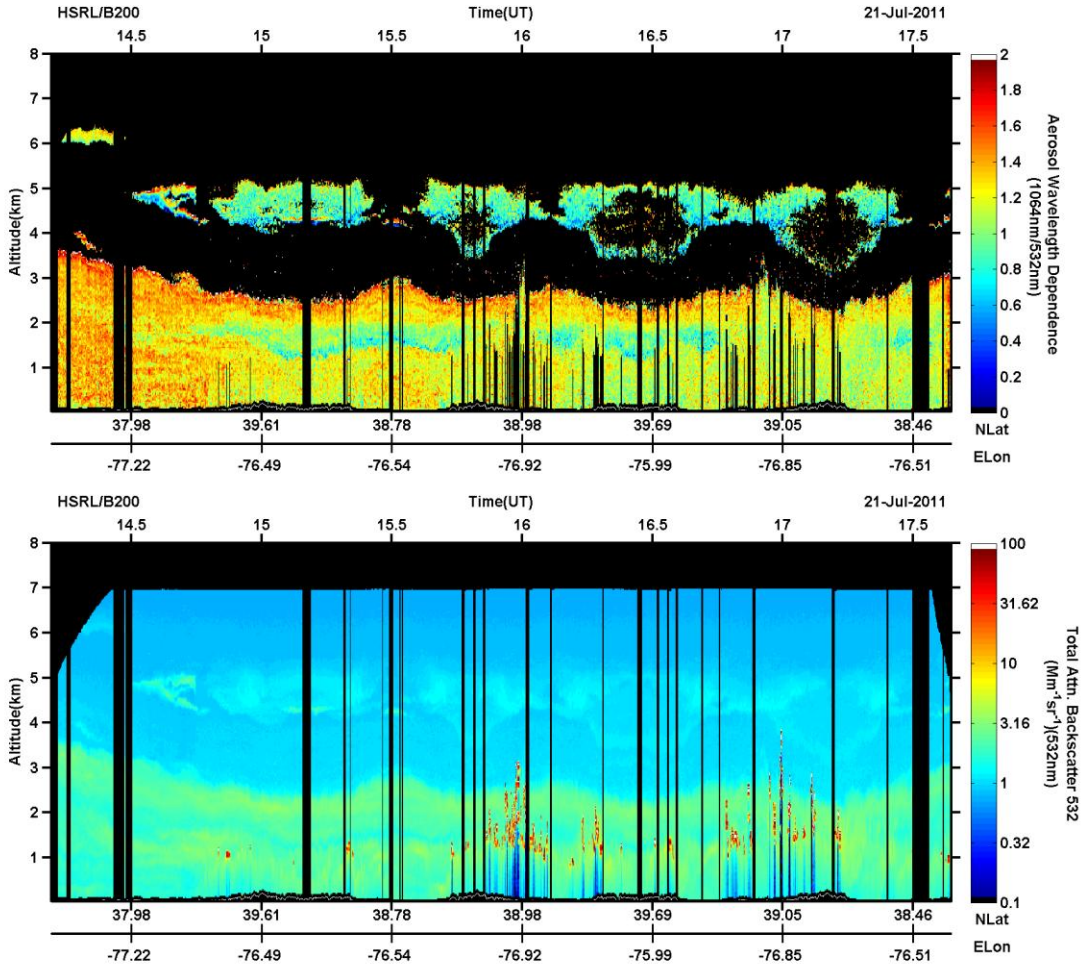

HSRL/B200
Time(UT)
21-Jul-2011
14.5
15
15.5
16
16.5
17
17.5
Altitude(km)
8
7
6
5
4
3
2
1
31.62
10
3.16
1
0.32
0.1
Aerosol Scattering Ratio (1064nm)
37.98
39.61
38.78
38.98
39.69
39.05
38.46
NLat
-77.22
-76.49
-76.54
-76.92
-75.99
-76.85
-76.51
ELon

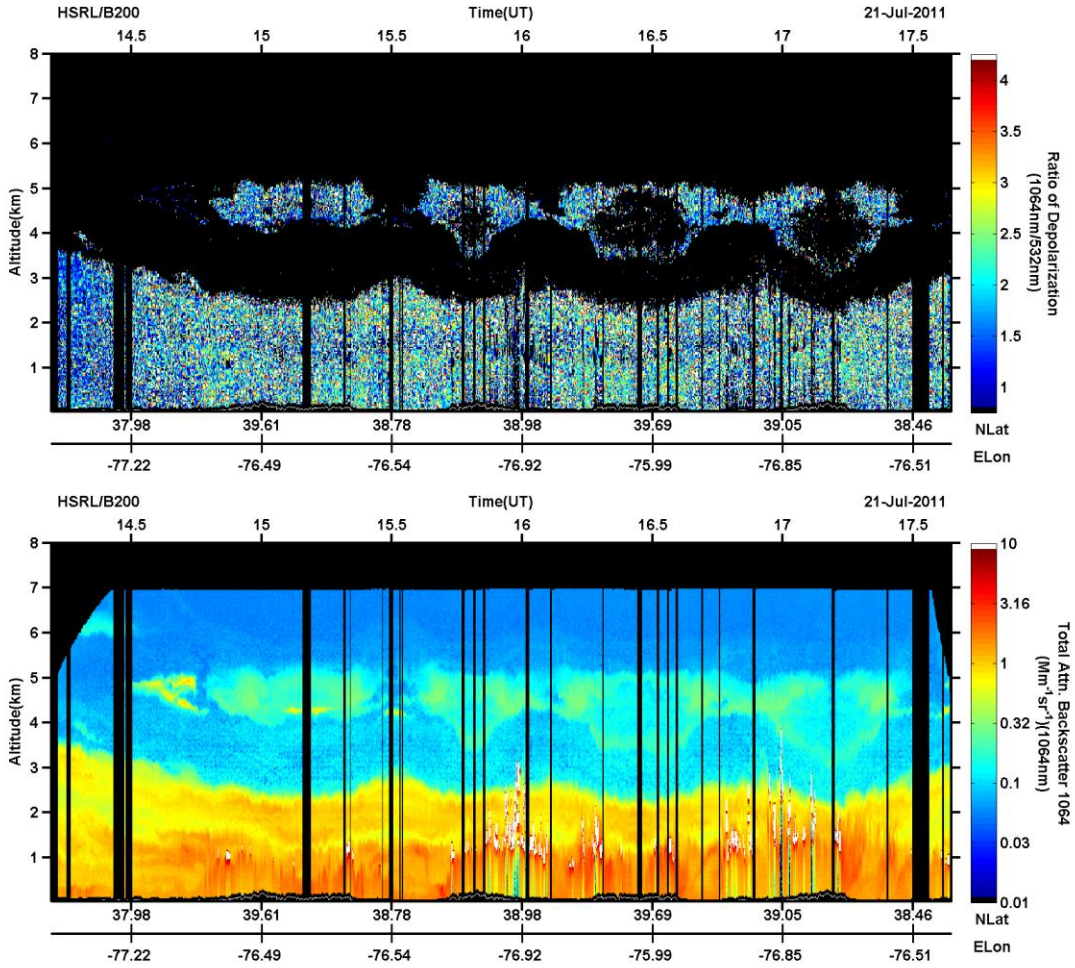

HSRL/B200
Time(UT)
21-Jul-2011
14.5
15
15.5
16
16.5
17
17.5
Altitude(km)
8
7
6
5
4
3
2
1
0.25
0.16
0.1
0.06
0.04
0.03
0.02
0.01
Total Depolarization Ratio (532nm)
37.98
39.61
38.78
38.98
39.69
39.05
38.46
NLat
-77.22
-76.49
-76.54
-76.92
-75.99
-76.85
-76.51
ELon


HSRL/B200
Time(UT)
21-Jul-2011
14.5
15
15.5
16
16.5
17
17.5
Altitude(km)
8
7
6
5
4
3
2
1
Dust Mixing Ratio (none)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
37.98
39.61
38.78
38.98
39.69
39.05
38.46
NLat
-77.22
-76.49
-76.54
-76.92
-75.99
-76.85
-76.51
ELon
HSRL/B200
Time(UT)
21-Jul-2011
14.5
15
15.5
16
16.5
17
17.5
Altitude(km)
8
7
6
5
4
3
2
1
Aerosol Extinction (km-1)
0.4
0.25
0.16
0.1
0.06
0.04
0.03
0.02
0.01
37.98
39.61
38.78
38.98
39.69
39.05
38.46
NLat
-77.22
-76.49
-76.54
-76.92
-75.99
-76.85
-76.51
ELon


NASA Langley HSRL/B200 21-Jul-2011
39° N
38° N
37° N
76° W
15:48
14:57
17:15
16:38
15:23
16:13
15:35
16:00
14:45
16:50
17:28
14:32
14:19
13:54
14:06
AOT (532 nm)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0


HSRL/B200
Time(UT)
21-Jul-2011
14.5
15
15.5
16
16.5
17
17.5
Altitude(km)
Extinction/Backscatter Ratio (sr)
NLat
ELon
37.98
39.61
38.78
38.98
39.69
39.05
38.46
-77.22
-76.49
-76.54
-76.92
-75.99
-76.85
-76.51


HSRL/B200
Time(UT)
21-Jul-2011
14.5
15
15.5
16
16.5
17
17.5
Altitude(km)
8
7
6
5
4
3
2
1
37.98
39.61
38.78
38.98
39.69
39.05
38.46
-77.22
-76.49
-76.54
-76.92
-75.99
-76.85
-76.51
NLat
ELon
Aerosol Wavelength Dependence
(1064nm/532nm)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
HSRL/B200
Time(UT)
21-Jul-2011
Altitude(km)
Total Attn. Backscatter 532
(Mm-1sr-1)(532nm)
100
31.62
10
3.16
1
0.32
0.1
NLat
ELon



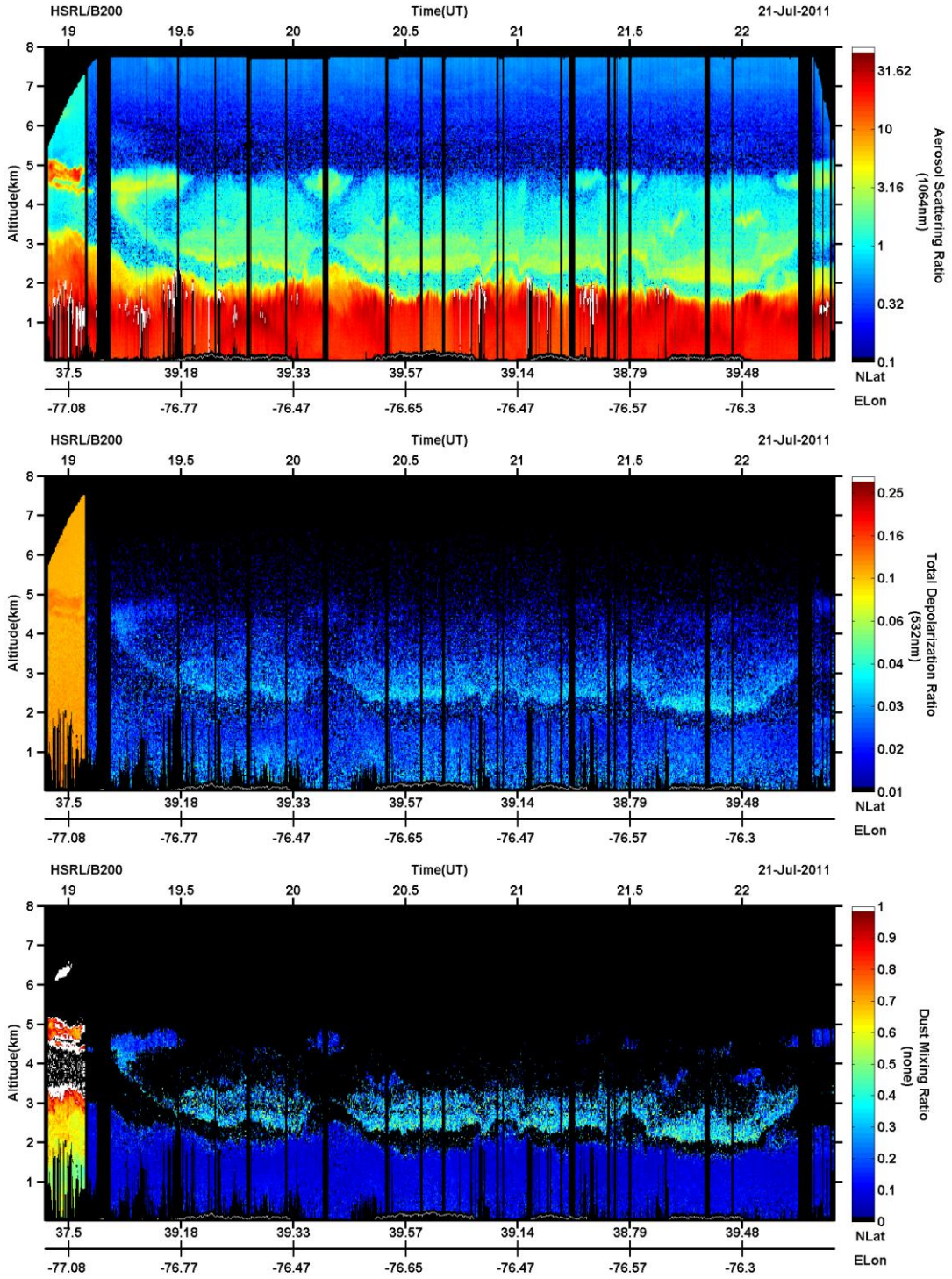
FLIGHT: Afternoon science flight (2 of 2)

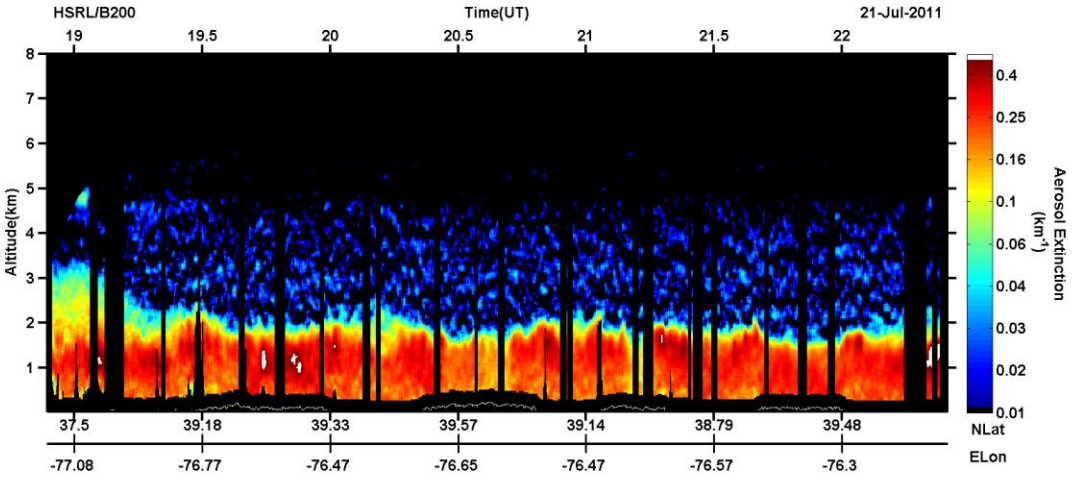
DATE: July 21, 2011

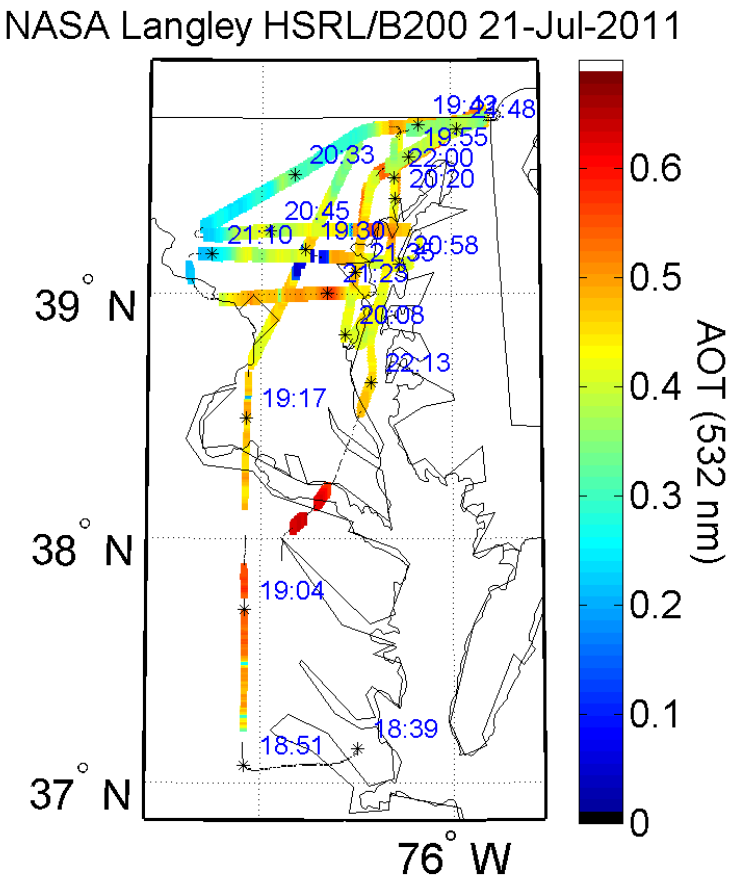
DURATION: 4.0 hours

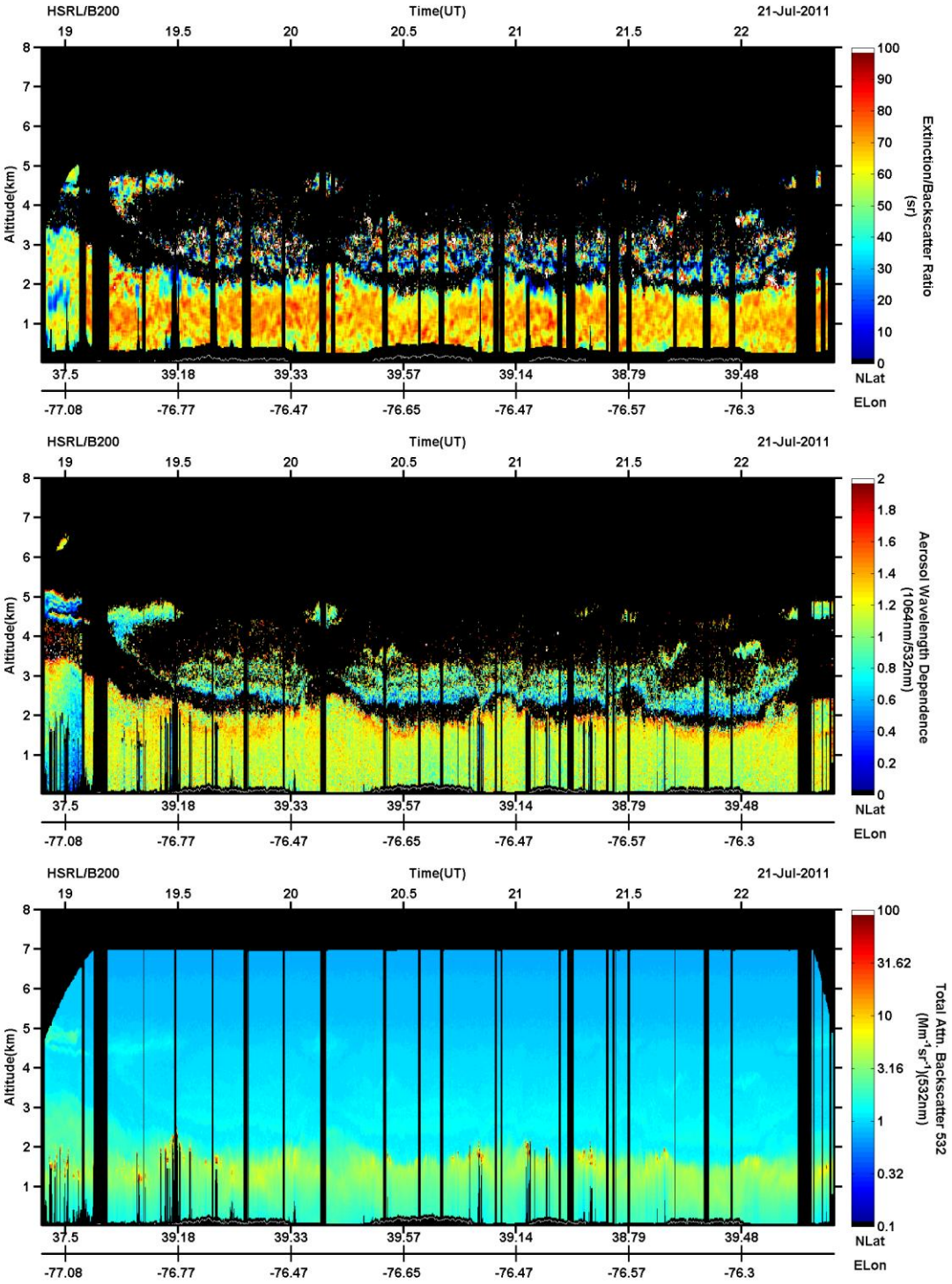
SUMMARY: Takeoff was about 2:30 PM local time from Newport News, VA. HSRL operation was nominal. The alternate flight plan was flown involving an east-west raster pattern over the DC/Baltimore area. Hot, humid, and hazy conditions persisted from the morning flight. Boundary layer depths were up to about 2 km with a more rarified aerosol layer extending from the top of the boundary layer up to about 5 km. The data from the beginning of the flight to about 19.1 UTC should be disregarded.

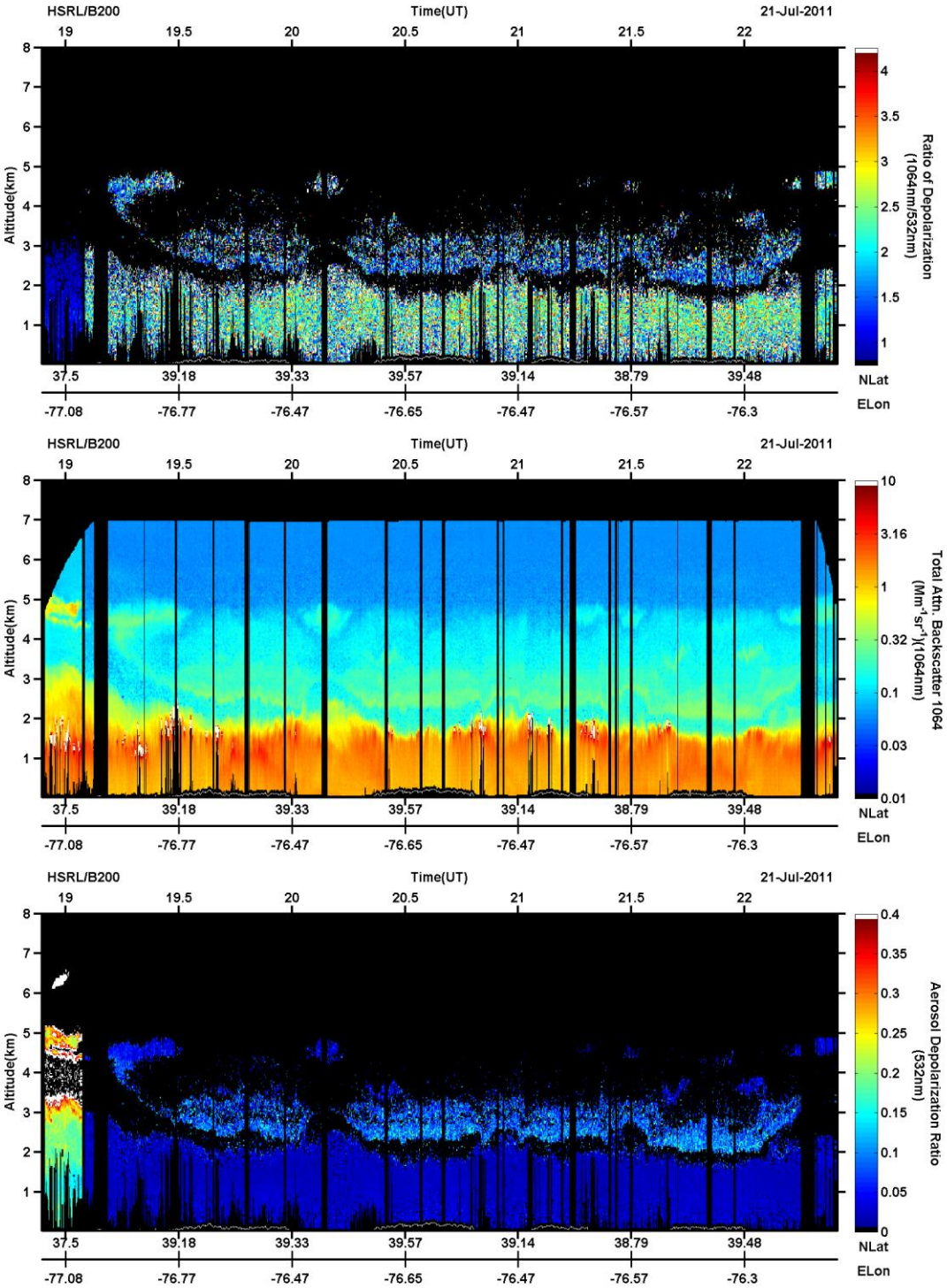
SUMMARY PLOTS:

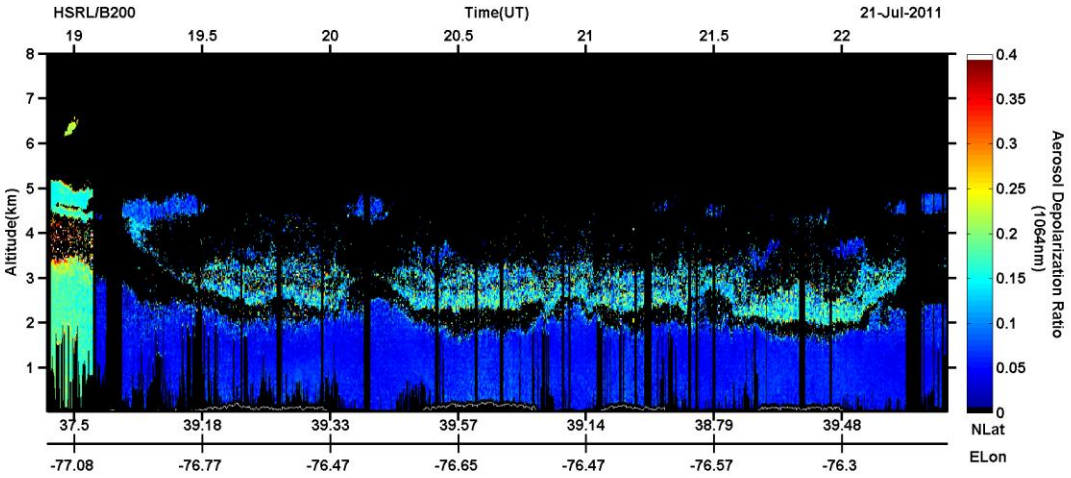

HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
8
7
6
5
4
3
2
1
31.62
10
3.16
1
0.32
0.1
Aerosol Scattering Ratio
(1064nm)
37.5
39.18
39.33
39.57
39.14
38.79
39.48
NLat
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
ELon
HSRL/B200
Time(UT)
21-Jul-2011
Altitude(km)
0.25
0.16
0.1
0.06
0.04
0.03
0.02
0.01
Total Depolarization Ratio
(532nm)
NLat
ELon
HSRL/B200
Time(UT)
21-Jul-2011
Altitude(km)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Dust Mixing Ratio
(none)
NLat
ELon

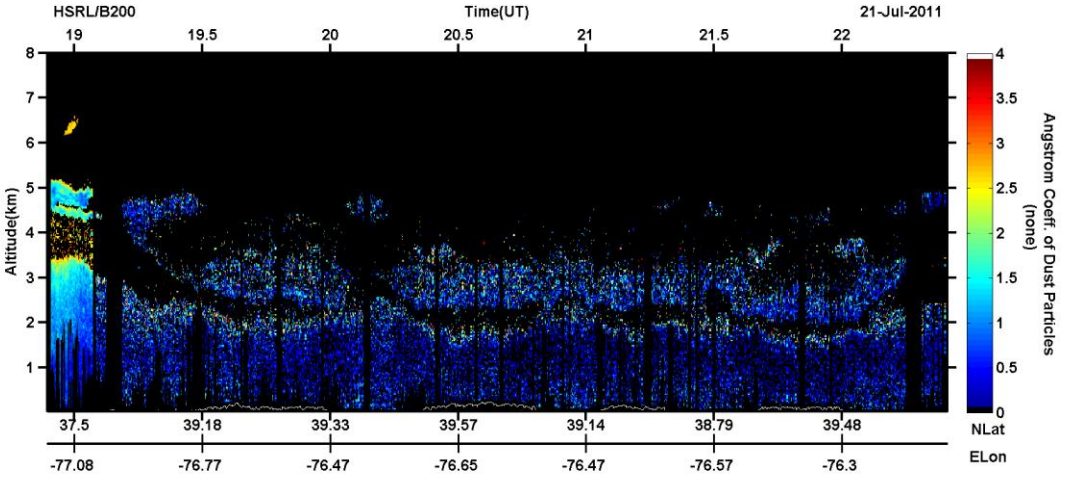

HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
8
7
6
5
4
3
2
1
0.4
0.25
0.16
0.1
0.06
0.04
0.03
0.02
0.01
Aerosol Extinction (km-1)
37.5
39.18
39.33
39.57
39.14
38.79
39.48
NLat
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
ELon

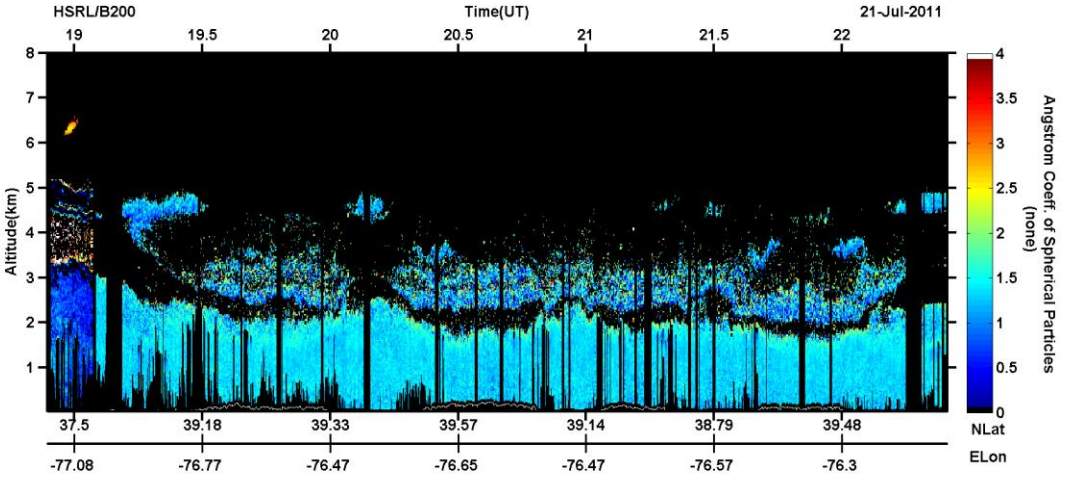

NASA Langley HSRL/B200 21-Jul-2011
19:48
19:55
20:33
22:00
20:20
20:45
21:10
19:30
20:58
21:35
21:25
20:08
22:13
19:17
19:04
18:39
18:51
39° N
38° N
37° N
76° W
0.6
0.5
0.4
0.3
0.2
0.1
0
AOT (532 nm)

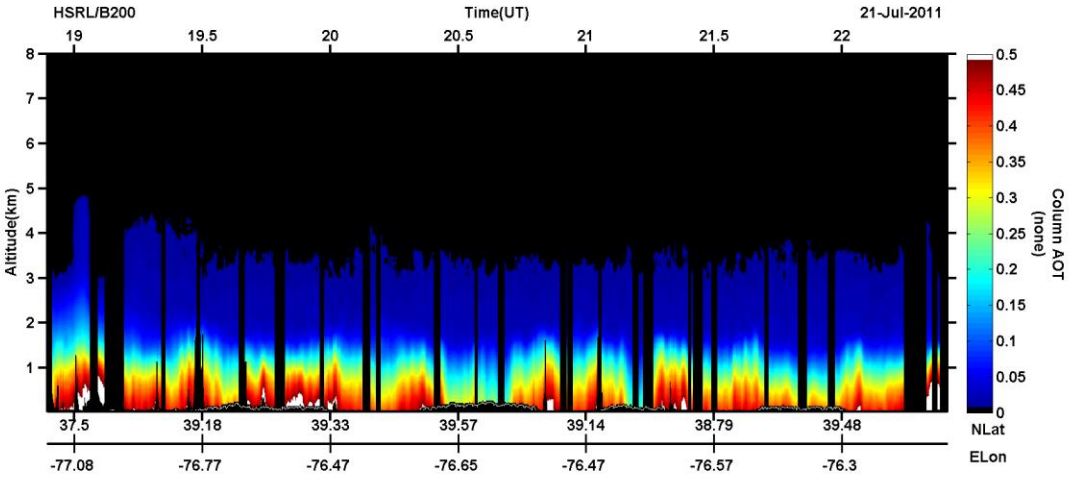

HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
Extinction/Backscatter Ratio (sr)
NLat
ELon
37.5
39.18
39.33
39.57
39.14
38.79
39.48
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
Aerosol Wavelength Dependence (1064nm/532nm)
Total Attn. Backscatter 532 (Mm-1sr-1)(532nm)

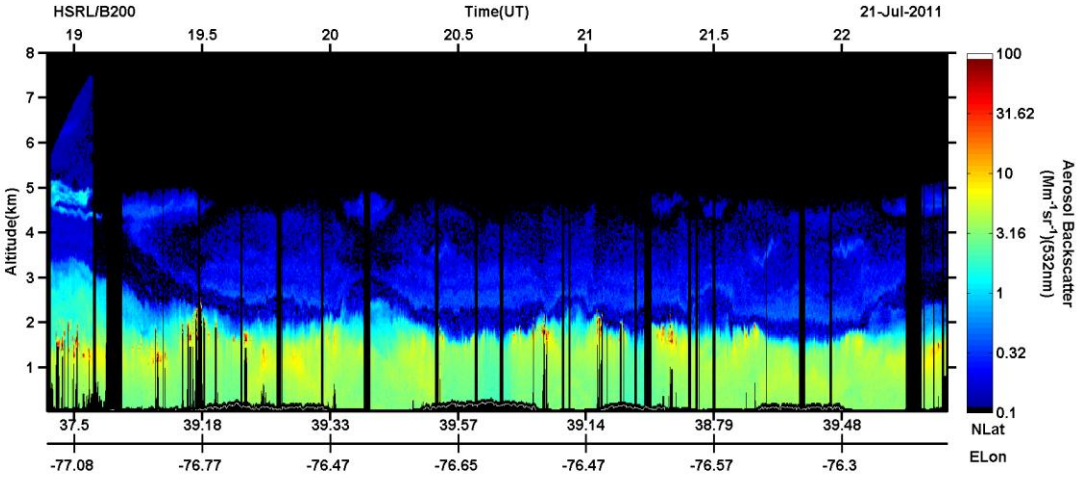

HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
Ratio of Depolarization (1064nm/532nm)
NLat
ELon
37.5
39.18
39.33
39.57
39.14
38.79
39.48
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
Total Attn. Backscatter 1064 (Mm-1sr-1)(1064nm)
Aerosol Depolarization Ratio (532nm)

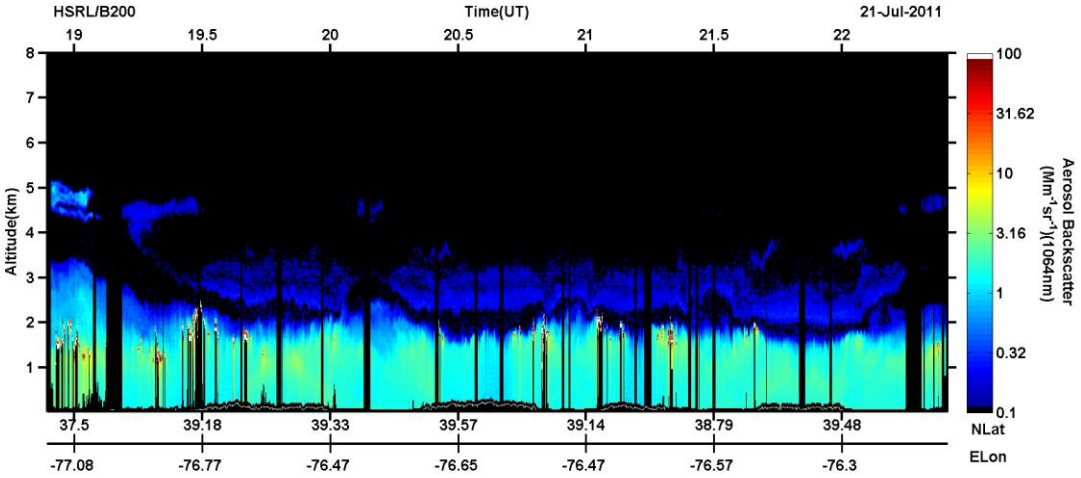

HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
8
7
6
5
4
3
2
1
37.5
39.18
39.33
39.57
39.14
38.79
39.48
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
NLat
ELon
Aerosol Depolarization Ratio (1064nm)
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0

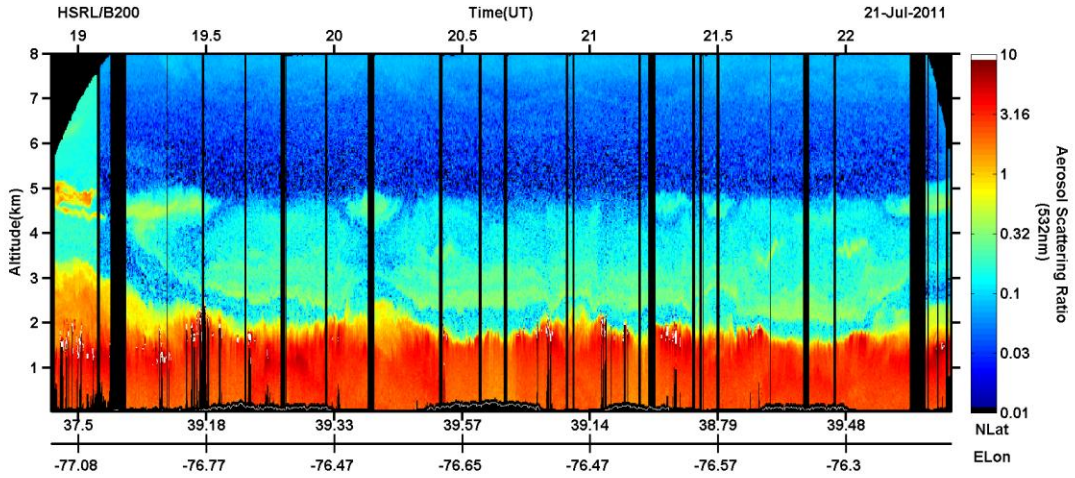

HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
8
7
6
5
4
3
2
1
37.5
39.18
39.33
39.57
39.14
38.79
39.48
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
NLat
ELon
Angstrom Coeff. of Dust Particles (none)
4
3.5
3
2.5
2
1.5
1
0.5
0

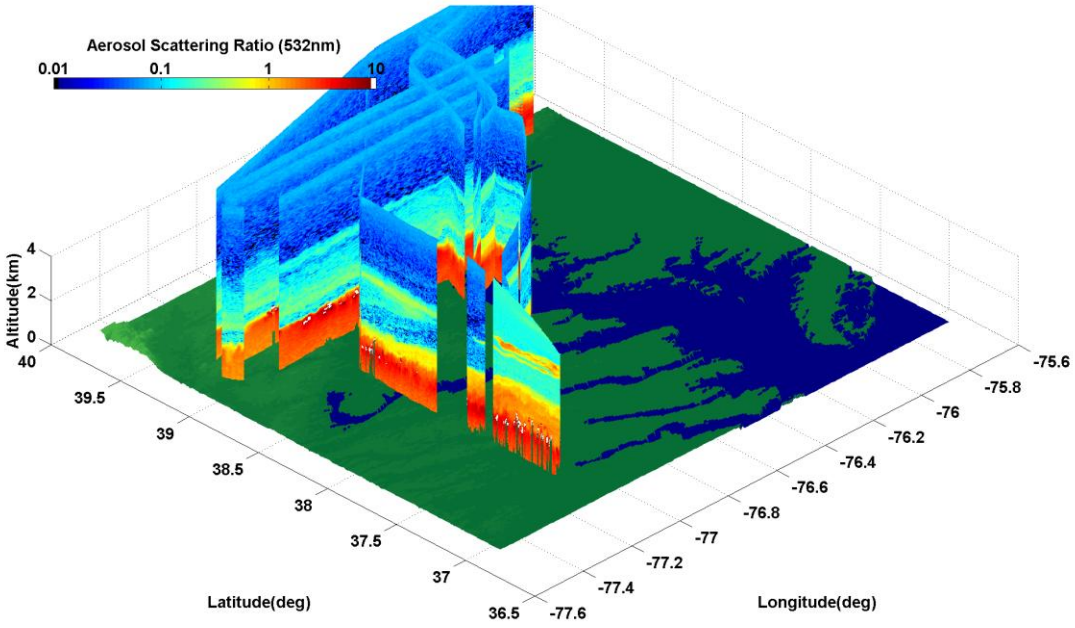

HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
8
7
6
5
4
3
2
1
37.5
39.18
39.33
39.57
39.14
38.79
39.48
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
NLat
ELon
Angstrom Coeff. of Spherical Particles (none)
4
3.5
3
2.5
2
1.5
1
0.5
0


HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
8
7
6
5
4
3
2
1
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Column AOT
(none)
37.5
39.18
39.33
39.57
39.14
38.79
39.48
NLat
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
ELon


HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
8
7
6
5
4
3
2
1
100
31.62
10
3.16
1
0.32
0.1
Aerosol Backscatter
(Mm-1sr-1)(532nm)
37.5
39.18
39.33
39.57
39.14
38.79
39.48
NLat
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
ELon


HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
8
7
6
5
4
3
2
1
100
31.62
10
3.16
1
0.32
0.1
Aerosol Backscatter
(Mm-1sr-1)(1064nm)
37.5
39.18
39.33
39.57
39.14
38.79
39.48
NLat
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
ELon


HSRL/B200
Time(UT)
21-Jul-2011
19
19.5
20
20.5
21
21.5
22
Altitude(km)
8
7
6
5
4
3
2
1
10
3.16
1
0.32
0.1
0.03
0.01
Aerosol Scattering Ratio (532nm)
37.5
39.18
39.33
39.57
39.14
38.79
39.48
NLat
-77.08
-76.77
-76.47
-76.65
-76.47
-76.57
-76.3
ELon


Aerosol Scattering Ratio (532nm)
0.01
0.1
1
10
Altitude(km)
4
2
0
40
39.5
39
38.5
38
37.5
37
36.5
Latitude(deg)
-75.6
-75.8
-76
-76.2
-76.4
-76.6
-76.8
-77
-77.2
-77.4
-77.6
Longitude(deg)